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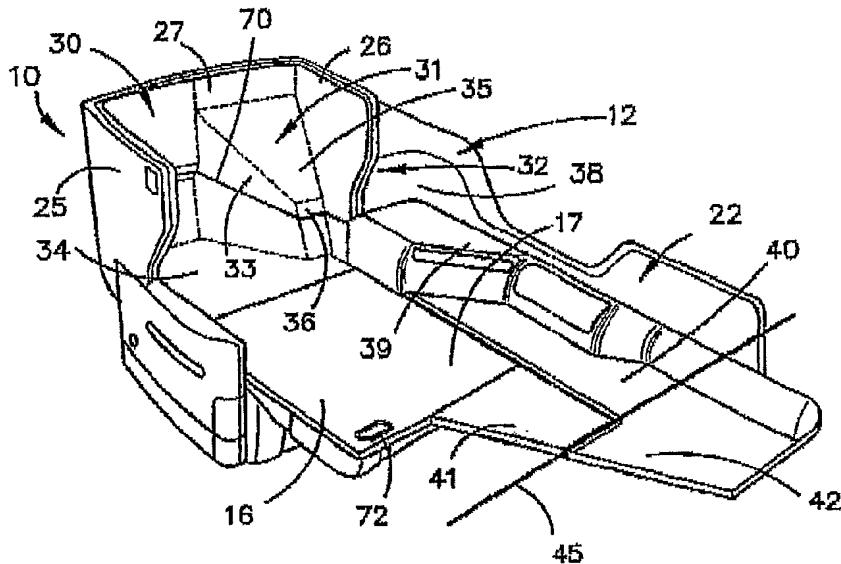
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(54) Title: AIRCRAFT SEATING AND SEATING ARRANGEMENTS



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(57) Abstract: A seating arrangement for an aircraft cabin is disclosed which includes seats having a backrest (16) which is pivotally moveable from an upright position to a flat position. A side ottoman (22) having a front portion (42) is located beside the seat base (14) of the seat. The seat has a footwell (32) into which the front portion of the side ottoman locates so that when the seat (16) is in the flat position a bed is formed by the rear surface (17), the front portion (42) located in the footwell of a front seat in front of the said seat and a base (34) of an open space (30) behind is the backrest (16) when in an upright position.

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AIRCRAFT SEATING AND SEATING ARRANGEMENTS

Field of the Invention

5 This invention relates to an aircraft seat and seating arrangements, and to an aircraft cabin having the seating arrangements.

Background of the Invention

10 International application no. PCT/SG2005/000041 discloses an aircraft seating arrangement particularly for first class or business class seating. The seat disclosed in this International application is intended
15 to fold from a position where a passenger can be seated, to a position where the seat becomes a bed.

The contents of the above International application are incorporated into this specification by this reference.

20 Summary of the Invention

The object of the invention is to improve the seat so a longer bed can be provided by each seat whilst still
25 maintaining or reducing seat pitch.

The invention provides a seat for an aircraft cabin, comprising:

30 a backrest, having a front surface for supporting a passenger in a seating position when the backrest is in an upright position, and having a rear surface;

a seat base upon which a passenger is seatable;

35 a rear seat section behind the backrest when the backrest is in the upright position, the rear seat

section having an open space which has a base, and a footwell closed to the open space beside the open space;

5 a fixed side ottoman located beside the seat portion and extending in front of the seat portion, the side ottoman having a front portion, the front portion of the side ottoman being locatable within the footwell of another said seat in front of the said seat;

10 the backrest being pivotally mounted for movement from the upright position to a flat position so the base of the open space, the rear surface of the backrest when in the flat position and the side ottoman form a bed configuration; and

15 the base, the rear surface of the backrest and the front portion of the ottoman form a substantially flat surface when the seat is in the bed configuration.

Thus, according to the invention when two such seats are located one in front of the other the front portion of the ottoman of the rear seat is locatable in the 20 footwell of the front seat. This enables the actual length of the bed to increase compared to that of the abovementioned International application. Further still, because there is some overlap of the seat with the front portion locating in the footwell, although the 25 length of the bedding is increased, the amount of space taken up by the seats can be the same pitch or reduced pitch compared to those in the above International application.

30 Preferably the backrest has an extension piece pivotally mounted to the backrest for pivotal movement when the backrest is in the flat position to fill a space between the rear of the backrest and the front portion of the ottoman, the extension piece forming part of the 35 substantially flat surface.

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Preferably the extension piece folds flat against the rear surface of the backrest when the backrest is in an upright position.

5 Preferably the seat has a shell having sides and a rear panel, the open space being defined by one of the sides and the footwell, the footwell being formed partly in the rear panel as a box section extending forwardly of the rear panel.

10

Preferably the sides have first rear sections and second front sections, the rear sections being higher than the front sections, and the open space being defined between one of the rear sections and the footwell.

15

Preferably the footwell has a front wall and the backrest when in the upright position is adjacent to the front wall.

20 Preferably the footwell has a second part outside one of the sides, the second part being in line with the side ottoman.

25 Preferably the side ottoman has a shelf adjacent the said one of the sides.

The seat when in the bed configuration may provide a bed which is substantially horizontal or slightly upwardly inclined from the front portion of the side ottoman to the base of the open space.

The invention also provides an aircraft cabin having at least two seats arranged one in front of the other; each of said seats having;

35 (a) a backrest having a front surface for supporting a passenger in a seating position when the

backrest is in an upright position, and having a rear surface;

(b) a seat base upon which a passenger is seatable;

5 (c) a rear seat section behind the backrest when the backrest is in an upright position, the rear seat section having an open space which has a base, and a footwell closed to the open space beside the open space;

10 (d) a fixed side ottoman located beside the seat portion and extending in front of the seat portion, the side ottoman having a front portion; and wherein
the backrest is pivotally mounted for movement from the upright position to a flat position so the base
15 of the open space, the rear surface of the backrest when in the flat position and the side ottoman form a bed configuration;

20 the base, the rear surface of the backrest and the front portion of the ottoman form a substantially flat surface when the seat is in the bed configuration;

the front portion of the ottoman of a rear seat of the two seats extending into the footwell of a front seat of the two seats; and

25 wherein when the rear seat is in the bed configuration a passenger can lie transverse with respect to a central axis of the aircraft with the passenger's head resting on the base of the open space of the rear seat and the passenger's feet located in the footwell of the front seat on the front portion of the side ottoman of the rear seat.

30 Preferably the backrest has an extension piece pivotally mounted to the backrest for peripheral movement when the backrest is in the flat position to fill a space between the rear of the backrest and the front portion of the ottoman, the extension piece forming part of the

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substantially flat surface.

Preferably the extension piece folds flat against the
5 rear surface of the backrest when the backrest is in an
upright position.

Preferably the seat has a shell having sides and a rear
panel, the open space being defined by one of the sides
10 and the footwell, the footwell being formed partly in
the rear panel as a box section extending forwardly of
the rear panel.

Preferably the sides have first rear sections and second
front sections, the rear sections being higher than the
15 front sections, and the open space being defined between
one of the rear sections and the footwell.

Preferably the footwell has a front wall and the
backrest when in the upright position is adjacent to the
20 front wall.

Preferably the footwell has a second part outside one of
the sides, the second part being in line with the side
ottoman.

25

Preferably the side ottoman has a shelf adjacent the
said one of the sides.

Brief Description of the Drawings

30

A preferred embodiment of the invention will be
described, by way of example, with reference to the
accompanying drawings in which:

35 Figure 1 is a view of a seat according to the preferred
embodiment in a seated position with the seat in an

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upright position;

Figure 2 is a view of the seat of Figure 1 but showing a passenger reclined on the seat whilst the seat is in the
5 upright position;

Figure 3 is a view of the seat of Figures 1 and 2 in a bed configuration;

10 Figure 4 is a rear view of a seat according to the preferred embodiment;

Figure 5 is a plan view through two seats;

15 Figure 6 is a cross-section through the seats of Figure 5;

Figure 7 is an illustration showing the configuration of the previously mentioned International application; and
20

Figure 8 is an illustration of the preferred embodiment of the invention showing the difference between the preferred embodiment and the seat of Figure 7.

25 Detailed Description of the Drawings

Figure 1 is a view showing a seat 10 in an upright position with a passenger seated in the seat 10.

30 Figure 2 is a view of the same seat 10 shown in Figure 1 with one leg of the passenger resting on a side ottoman. In an aircraft cabin a number of these seats are arranged one in front of another and are fixed to suitable supports such as rails or the like (not shown) to secure the seats in place.
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As shown in Figures 1 and 2 the seat has a shell 12 formed from any suitable rigid material such as aluminium, rigid plastic material or the like. The shell 12 supports a seat base 14 and the backrest 16.

5

The shell 12 has a side shell 20 which supports a side ottoman 22. The side shell 20 typically extends adjacent the side wall of the aircraft cabin.

10 The shell 12 has first and second side portions 23 and 24 and first and second rear side portions 25 and 26. The rear sections 25 and 26 are higher than the front sections 23 and 24. The shell 12 also has a rear panel 27.

15

The seat 10 will be provided with a safety belt as is conventional, which is not shown in the drawings. A separate set of safety belts can be provided for the seat when in the bed configuration.

20

Figure 3 is a view of the seat 10 in a bed configuration. In the configuration shown in Figure 3 the backrest 16 has been pivoted down to a flat position so that rear surface 17 is uppermost. Movement of the 25 backrest to the position shown in Figure 3 exposes a rear seat portion 30 located behind the backrest 16 when in the upright position, and which is generally defined by the back panel 27 and the side sections 25 and 26. The rear seat section 30 has an open space 32 which has 30 a base 34, and the first part 31 of a footwell cavity 32. The footwell part 31 is a box section formed from an upright panel 33, an inclined top panel 35, and a small front surface 36. A second part 38 of the footwell 32 is an extension of the part 31 defined 35 within the shell 12 beside wall 26.

The side ottoman 22 has a shelf 39 which can be used both when the seat is in the seating configuration shown in Figures 1 and 2 and the bed configuration shown in Figure 3. The ottoman 22 has an ottoman surface 40 and 5 a front portion 42 which is a continuation of the surface 40. The front portion 42 is located in front of the backrest 16 when the backrest in the position shown in Figure 3.

10 An extension piece 41 is pivotally connected to the backrest 16 and can pivot from a position overlapping the backrest 16 to the position shown in Figure 3 to occupy the space between the rear surface 17 of the backrest and the front portion 42 of the ottoman. The 15 line 45 shown in Figure 3 generally shows the position of the rear panel 27' (Fig 6) of another seat 10' (Fig 6) in front of the seat shown in Figure 3.

20 The front portion of the ottoman 42 extends into the footwell 32' of the seat 10' in front of the seat 10 shown in Figure 3 as is best shown in Figure 4.

25 In Figure 4 the front seat 10' located in front of the seat 10 shows the cavity which forms the footwell 32' into which the front portion 42 extends.

When the seat is in the bed configuration shown in Figure 3 the base 34 of the open space 32, the rear surface 17 of the backrest 16, the extension piece 41 30 and the front portion 42 of the ottoman 22 form a flat surface which forms a bed.

35 The preferred embodiment of the invention includes the side ottoman 22 as part of the available bed surface when the seat is in the bed configuration. The height

of the ottoman 22 is designed to match the height of the other bed components (i.e. rear surface 17) when the seat is in the bed configuration.

5 The base 34, rear surface 17 and extension piece 42 can be covered by a comfortable foam material or the like as is the ottoman surface 40 and front portion 42.

Figure 5 is a plan view of two seats 10 and 10' with the
10 seat 10 in the bed configuration. As is apparent from Figure 5 a person's head can locate in the open space 32 resting on the base 34 (or on a pillow or other comfortable head support located on the base 34) and the person can lay diagonally across the rear surface 17 of the backrest 16 with the person's feet locating on the front portion 42 of the ottoman 22 within the footwell 32' of the front seat 10'.

A side view of the two seats is shown in Figure 5. In
20 Figure 6 a pivotal coupling 51 can be seen which enables the backrest 16 to move from the upright position to the flat position as shown by dotted line A, and also the pivotal coupling 52 which enables the extension piece 41 to move from the folded position against the rear surface 17 of the backrest 16 into positions shown in Figure 6 as illustrated by the dotted line B in Figure 6. It is also apparent from Figure 6 that the front portion 42 of the side ottoman 22 extends into the footwell 31' of the front seat 10'. Figure 6 also shows
25 the supporting structure 52 which supports the seat in the aircraft cabin. The supporting structure 52 is conventional and therefore will not be described in any further detail. Figure 6 also shows seat mechanism 53 for enabling the seat to be adjusted between a fully upright position shown in Figures 1 and 2 and into a
30
35

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reclined position in which the seat base 14 moves slightly forward causing the backrest 16 to take up a more inclined upright position. Again the mechanism 53 is conventional and therefore will not be described in
5 further detail.

Figure 7 is a plan view of two seats according to the abovementioned International application with the rear seat in the bed configuration. As can be seen from
10 Figure 7 the width of the actual seat portion itself is 38 inches with the overall width of the seating configuration being 46 inches. The length of the bed is generally illustrated by double-headed arrow C in Figure 7.

15 Figure 8 shows the rear seat 10 of the preferred embodiment of the invention in the bed configuration, with the front seat 10' in the normal upright configuration. As is apparent from Figure 8 the width
20 of the seat is reduced to about 30 inches whilst the overall width of the configuration remains the same. However, the length of the bed is increased as shown by arrow D. Arrow C is also shown in Figure 8 for comparison purposes. Thus, the bed configuration is
25 larger without sacrificing the overall width of the seat configuration shown in Figures 7 and 8 or the overall length of the seat configuration. Thus, a larger bed length is achieved for the same pitch of seating within the aircraft cabin.

30 The rear of the panel 27 may be provided with a television screen for the person behind that seat or with other items such as a foldable shelf etc.

35 In the preferred embodiment of the invention the shell 12 can be formed in a number of parts such as a first

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part containing the sides 23 and 24 and the lower part of the footwell part 31 and the rear sections 25 and 26. The upper part of the rear panel 30 together with the upper part of the footwell 31 can be formed as a second 5 part and joined to the first part along, for example, line 70 shown in Figure 3.

When the seat 16 is in the upright position the rear of the seat 17 can rest against the front wall 36 for 10 support. The seat may also lock in the upright position as is conventional until it is adjusted to move into the flat position shown in Figure 3 by means of a release mechanism 72 shown in Figure 3 which can be manoeuvred to allow the seat to fold into the flat position shown 15 in Figure 3 and used as a handle to return the seat to the upright position.

In the claims which follow and in the preceding 20 description of the invention, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of 25 further features in various embodiments of the invention.

Since modifications within the spirit and scope of the 30 invention may readily be effected by persons skilled within the art, it is to be understood that this invention is not limited to the particular embodiment described by way of example hereinabove.

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AIRCRAFT SEATING AND SEATING ARRANGEMENTS

CLAIMS

5

1. A seat for an aircraft cabin, comprising:
 - a backrest, having a front surface for supporting a passenger in a seating position when the backrest is in an upright position, and having a rear surface;
 - a seat base upon which a passenger is seatable;
 - a rear seat section behind the backrest when the backrest is in the upright position, the rear seat section having an open space which has a base, and a footwell closed to the open space beside the open space;
 - a fixed side ottoman located beside the seat portion and extending in front of the seat portion, the side ottoman having a front portion, the front portion of the side ottoman being locatable within the footwell of another said seat in front of the said seat;
 - the backrest being pivotally mounted for movement from the upright position to a flat position so the base of the open space, the rear surface of the backrest when in the flat position and the side ottoman form a bed configuration; and
 - the base, the rear surface of the backrest and the front portion of the ottoman form a substantially flat surface when the seat is in the bed configuration.

30

2. The seat of claim 1, wherein the backrest has an extension piece pivotally mounted to the backrest for pivotal movement when the backrest is in the flat position to fill a space between the rear of the backrest and the front portion of the ottoman, the extension piece forming part of the substantially flat

surface.

3. The seat of claim 2, wherein the extension piece folds flat against the rear surface of the
5 backrest when the backrest is in an upright position.

4. The seat of claim 1, wherein the seat has a shell having sides and a rear panel, the open space being defined by one of the sides and the footwell, the
10 footwell being formed partly in the rear panel as a box section extending forwardly of the rear panel.

5. The seat of claim 4, wherein the sides have first rear sections and second front sections, the rear
15 sections being higher than the front sections, and the open space being defined between one of the rear sections and the footwell.

6. The seat of claim 5, wherein the footwell has
20 a front wall and the backrest when in the upright position is adjacent the front wall.

7. The seat of claim 4, wherein the footwell has a second part outside one of the sides, the second part
25 being in line with the side ottoman.

8. The seat of claim 1, wherein the side ottoman has a shelf adjacent the said one of the sides.

30 9. An aircraft cabin having at least two seats arranged one in front of the other; each of said seats having;
35 (a) a backrest having a front surface for supporting a passenger in a seating position when the backrest is in an upright position, and having a rear surface;

(b) a seat base upon which a passenger is
seatable;

5 (c) a rear seat section behind the backrest
when the backrest is in an upright position, the rear
seat section having an open space which has a base, and
a footwell closed to the open space beside the open
space;

10 (d) a fixed side ottoman located beside the
seat portion and extending in front of the seat portion,
the side ottoman having a front portion; and wherein

15 the backrest is pivotally mounted for movement
from the upright position to a flat position so the base
of the open space, the rear surface of the backrest when
in the flat position and the side ottoman form a bed
configuration;

the base, the rear surface of the backrest and
the front portion of the ottoman form a substantially
flat surface when the seat is in the bed configuration;

20 the front portion of the ottoman of a rear
seat of the two seats extending into the footwell of a
front seat of the two seats; and

25 wherein when the rear seat is in the bed
configuration a passenger can lie transverse with
respect to a central axis of the aircraft with the
passenger's head resting on the base of the open space
of the rear seat and the passenger's feet located in the
footwell of the front seat on the front portion of the
side ottoman of the rear seat.

30 10. The cabin of claim 9, wherein the backrest has
an extension piece pivotally mounted to the backrest for
pivotal movement when the backrest is in the flat
position to fill a space between the rear of the
backrest and the front portion of the ottoman, the
35 extension piece forming part of the substantially flat
surface.

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11. The cabin of claim 10, wherein the extension piece folds flat against the rear surface of the backrest when the backrest is in an upright position.

5

12. The cabin of claim 9, wherein the seat has a shell having sides and a rear panel, the open space being defined by one of the sides and the footwell, the footwell being formed partly in the rear panel as a box
10 section extending forwardly of the rear panel.

13. The cabin of claim 12, wherein the sides have first rear sections and second front sections, the rear sections being higher than the front sections, and the
15 open space being defined between one of the rear sections and the footwell.

14. The cabin of claim 9, wherein the footwell has a front wall and the backrest when in the upright
20 position is adjacent the front wall.

15. The cabin of claim 11, wherein the footwell has a second part outside one of the sides, the second part being in line with the side ottoman.

25

16. The cabin of claim 9, wherein the side ottoman has a shelf adjacent the said one of the sides.

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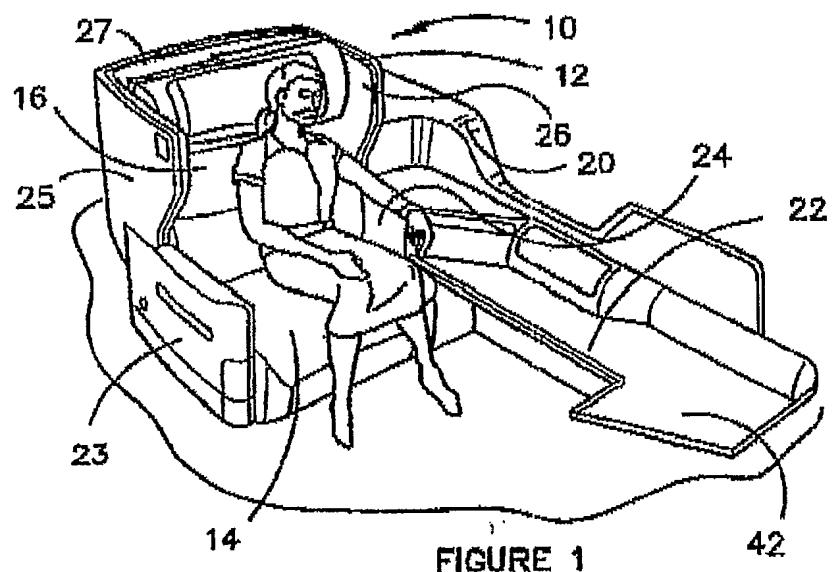


FIGURE 1

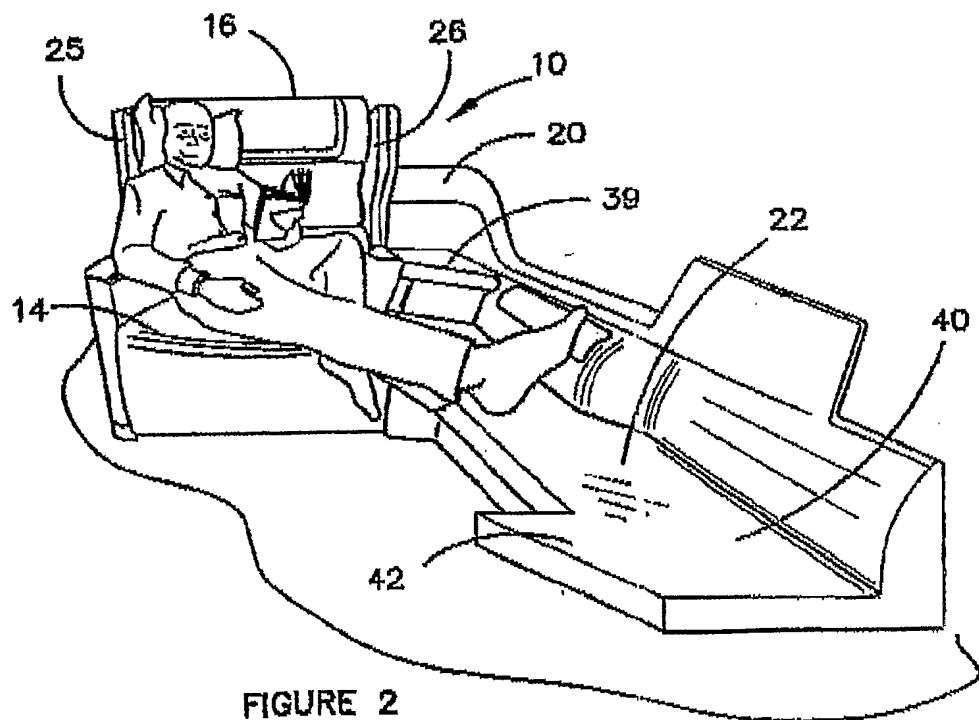
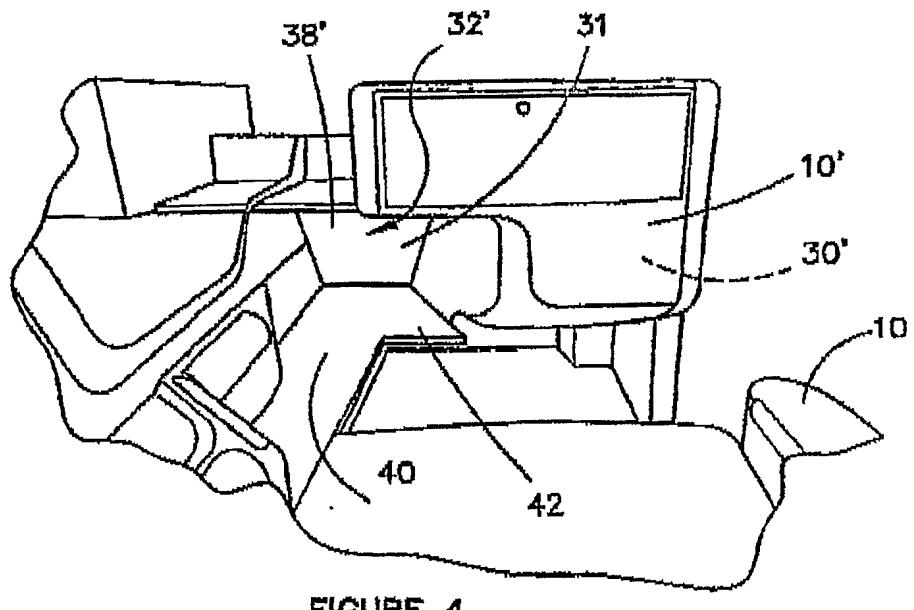
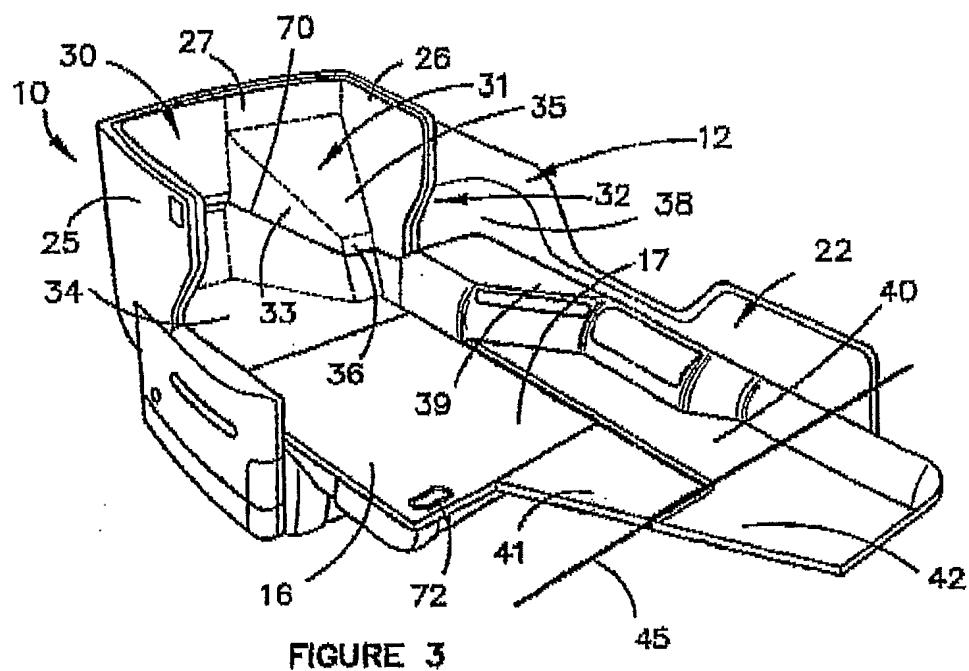


FIGURE 2

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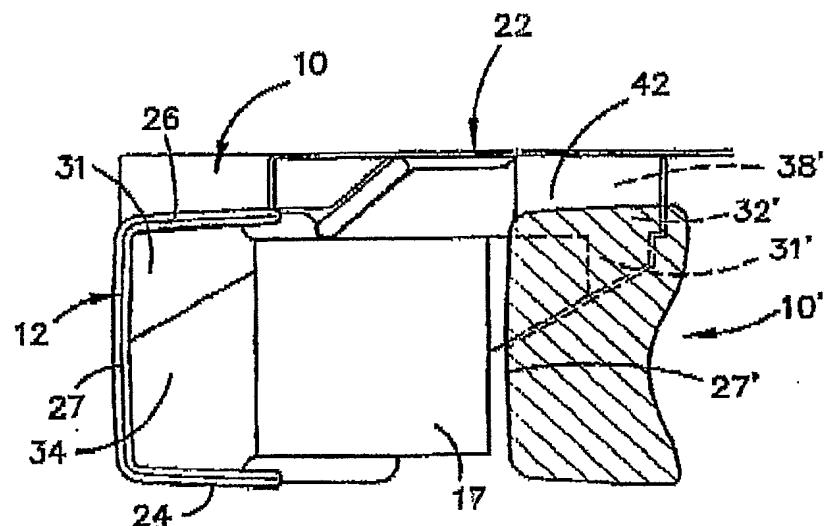


FIGURE 5

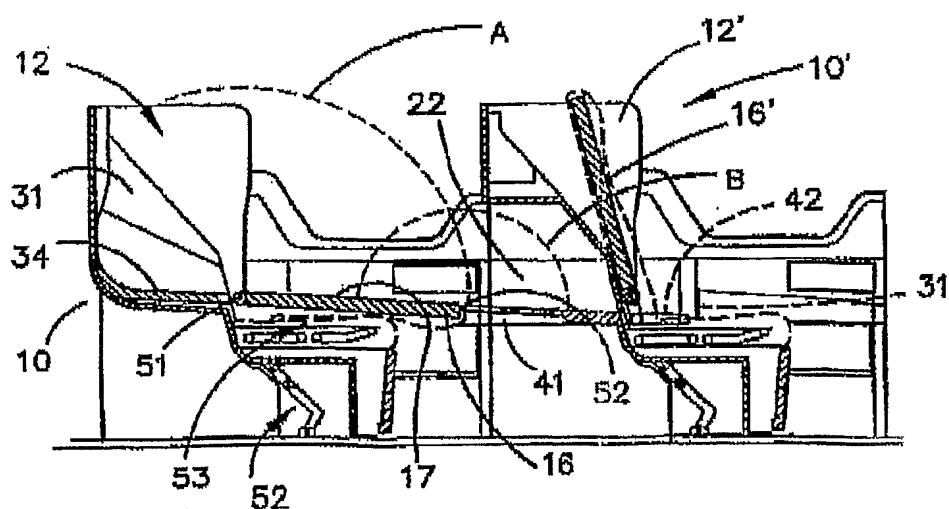


FIGURE 6

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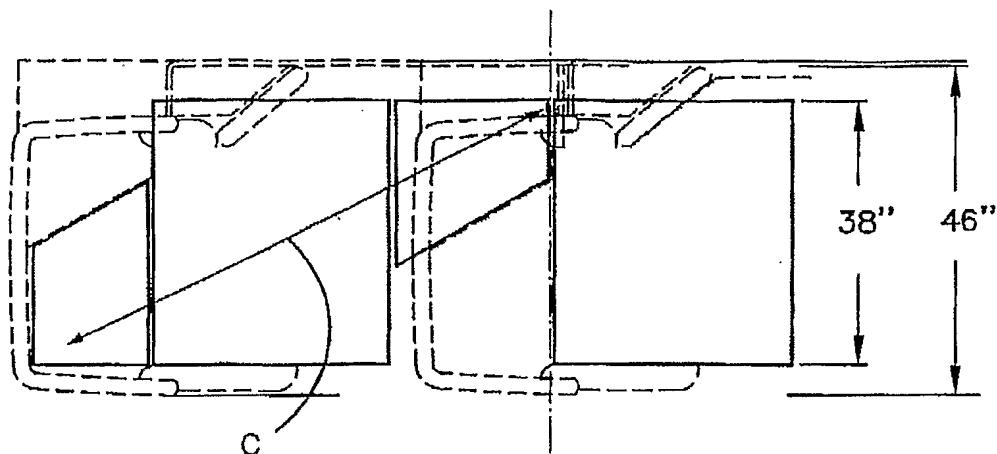


FIGURE 7

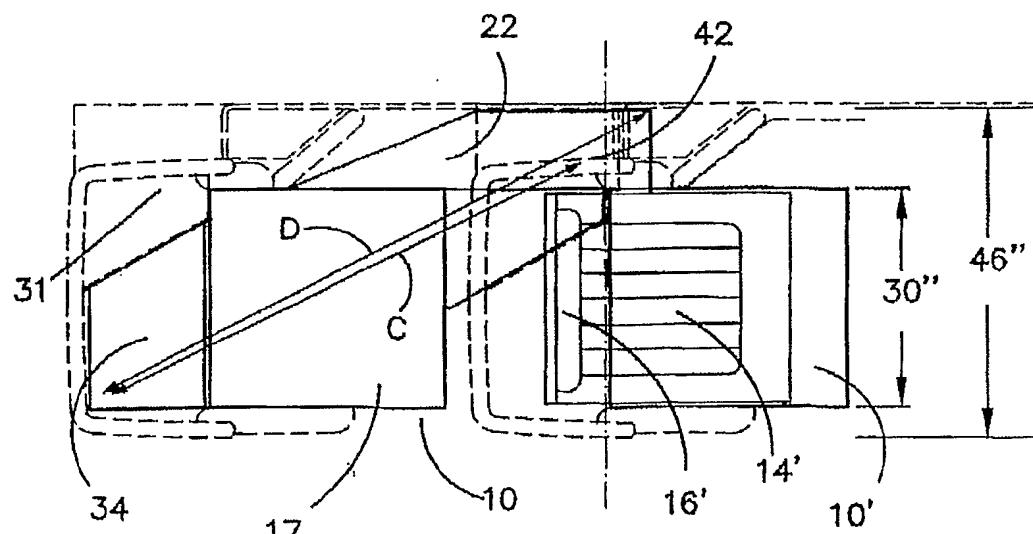


FIGURE 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2005/000401

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

B64D 11/06 (2006.01) B60N 2/34 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 DWPI IPC B64D.11/-, B60N 3/-, B63B 29/-, B61D 1/-, 31/-, 33/-, 37/-, B60P 3/-, B62D 47/- and KEYWORDS
 aircraft, aeroplane, plane, seat, chair, lounge, ottoman, foot, feet, rest, sleep, bed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2003/013903 A1 (VIRGIN ATLANTIC AIRWAYS LIMITED) 20 February 2003	1 to 16
A	EP 0 957 025 A2 (KOITO INDUSTRIES, LTD) 17 November 1999	1 to 16
A	GB 2 295 962 A (BRITISH AIRWAYS PLC) 19 June 1996	1 to 16



Further documents are listed in the continuation of Box C



See patent family annex

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Date of the actual completion of the international search
07 February 2006

Date of mailing of the international search report
15 FEB 2006

Name and mailing address of the ISA/AU

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SG2005/000401

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member				
WO 2003/013903	BR	0211804	CA	2456130	CN	1628043	
	EP	1417113	EP	1495908	EP	1571037	
	EP	1602526	GB	2396103	GB	2405790	
	GB	2405791	GB	2406269	GB	2412310	
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EP 0957025	JP	2000-033900	US	6227489			
GB 2295962	AU	35754/99	AU	35755/99	AU	39102/95	
	AU	41823/96	BR	9510008	CA	2165097	
	CA	2389315	CH	692978	CH	692979	
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	DE	19544754	EP	0794897	EP	1162138	
	FI	972497	FI	20011825	FI	20040633	
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	GB	2331237	HK	1002312	HK	1002357	
	HK	1020432	HK	1028221	IT	RM950813	
	JP	8258796	NZ	297049	NZ	334165	
	NZ	334166	SG	33627	US	6059364	
	US	6209956	US	2002017810	US	2005077761	
	WO	1996/018537	ZA	9510537			

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

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